



Department of Defense
INSTRUCTION

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ASD(C3I)
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November 18, 1992
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ASD(C3I)

SUBJECT: Procedures for Compatibility, Interoperability, and Integration of Command, Control, Communications, and Intelligence (C3I) Systems

- References:
- (a) DoD Directive 4630.5, "Compatibility, Interoperability, and Integration of Command, Control, Communications, and Intelligence (C3I) Systems," November 12, 1992
 - (b) DoD Directive 5000.1, "Defense Acquisition," February 23, 1991
 - (c) DoD Instruction 5000.2, "Defense Acquisition Management Policies and Procedures," February 23, 1991
 - (d) DoD Directive 5105.19, "Defense Information Systems Agency (DISA)," June 25, 1991
 - (e) through (o), see enclosure 1

A. PURPOSE

This Instruction implements the policy in reference (a), assigns responsibilities, and prescribes procedures to achieve compatibility and interoperability of a consolidated, DoD-wide, global C3I infrastructure.

B. APPLICABILITY AND SCOPE

This Instruction:

1. Applies to the Office of the Secretary of Defense (OSD), the Military Departments, the Chairman of the Joint Chiefs of Staff and the Joint Staff, the Unified and Specified Combatant Commands, the Inspector General of the Department of Defense, the Defense Agencies, and the DoD Field Activities (hereafter referred to collectively as "the DoD Components"). The term "Military Services," as used herein, refers to the Army, the Navy, the Air Force, and the Marine Corps.

2. Describes the process whereby compatibility, interoperability, and integration requirements for new or modified C3I capabilities are stated, coordinated, validated, and approved.

3. Applies to all C3I capabilities (including DoD National Foreign Intelligence Programs and Tactical Intelligence and Related Activities) and to the acquisition of new C3I systems (including nondevelopmental systems) and major changes (e.g. release of a new software version) to existing systems, where

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such capabilities and systems must interact or be integrated into the DoD C3I infrastructure.

C. DEFINITIONS

Terms used in this Instruction are defined in enclosure 2.

D. POLICY

It is DoD policy:

1. That forces for joint and combined operations must be supported through compatible, interoperable, and integrated C3I systems that can support operations worldwide throughout the entire spectrum of conflict.

2. To establish as a long-term objective a DoD-wide, global C3I infrastructure that can accommodate the widest possible range of missions and operational scenarios by allowing users to enter the infrastructure at anytime, anyplace, in the execution of any mission.

3. In accordance with DoD Directive 5000.1 and DoD Instruction 5000.2 (references (b) and (c)), to develop, acquire, and deploy C3I systems and equipment that meet essential operational needs of U.S. forces, that are compatible with existing and planned C3I systems and other electronic equipment, and that are interoperable with the U.S. and allied nations' functionally related C3I information systems and equipment.

4. That, for compatibility, interoperability, and integration, all C3I systems developed for use by U.S. forces are considered to be for joint use.

5. That interoperability and integration of C3I requirements shall be determined during the requirements validation process and shall be updated as necessary throughout the acquisition period, deployment, and operational life of a system.

E. RESPONSIBILITIES

1. The Principal Staff Assistants, shall, during all technical, program, budget, funding, or other reviews of the Military Departments or the Defense Agencies affecting C3I requirements:

a. Make recommendations to the appropriate decision authority on the conformance of the system or systems being reviewed to the policies established in section D., above.

b. Address whether the required compatibility and interoperability of C3I systems identified during the Mission

Need Statement (MNS) or the Operational Requirements Document (ORD) validation process can reasonably be maintained throughout the operational life of those systems.

2. The Chairman of the Joint Chiefs of Staff, in addition to those responsibilities outlined in DoD Directive 5000.1, and DoD Instruction 5000.2 (references (b) and (c)), shall:

a. In accordance with references (b) and (c), receive the MNSs and the ORDs for the C3I systems submitted by the DoD Components; review them for adherence to compatibility and interoperability policy established in section D., above; and make recommendations on potential for joint acquisition. Results of such reviews that identify unresolvable compatibility or interoperability issues shall be provided to the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (ASD(C3I)) with recommendations for a solution.

b. Ensure that the Directors of the Defense Agencies are included in the review process.

c. Where applicable, confirm that interoperability requirements for interfaces, software integration with other C3I or supporting functional information systems, or for interconnection with the Defense Information Systems Network (DISN) or other systems, are clearly identified in requirements submissions for new or modified C3I capabilities.

d. Assess compliance with U.S. standards and the Standardization Agreements (STANAGs) (including U.S.-ratified North Atlantic Treaty Organization (NATO) STANAGs).

e. Approve and document doctrinal concepts and associated operational procedures to achieve compatibility and interoperability of U.S. C3I systems employed by U.S. military forces.

f. In accordance with references (b) and (c), validate interface standards and recommend to the ASD(C3I) for approval, as appropriate.

g. Validate the requirements for compatibility, interoperability, and integration of C3I systems.

h. Develop a C3I objective concept and plan, in coordination with the other DoD Components, that supports the goal for a global C3I infrastructure.

3. The Heads of the DoD Components shall ensure that:

a. The policies established in section D., above are followed through:

(1) Cost and Operational Effectiveness Analyses.

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(2) Development, testing, procurement, deployment, and operations and maintenance programs.

(3) Related program and budget requests.

b. In accordance with established Joint Requirements Oversight Council (JROC) procedures:

(1) A copy of each Component-approved MNS and ORD involving development, acquisition, or modification of C3I systems is provided to the other DoD Components for review before the project begins.

(2) A copy of each MNS and ORD involving development, acquisition, or modification of C3I systems, is, on DoD Component approval, provided to the Defense Information Systems Agency (DISA) for interoperability assessment and inclusion in the joint C3I interoperability requirements data base.

(3) The MNSs and the ORDs received from other DoD Components are reviewed for compatibility, interoperability, integration, and adherence to standards.

c. A single office in each DoD Component is designated as the point of contact for actions required by this Instruction, and that all other DoD Components are advised of that designation.

d. C3I systems are properly tested and certified for end-to-end interoperability and that sufficient resources, to include equipment and test participant personnel, are provided to support such testing.

e. All requirements for new types of C3I equipment that are part of a weapons system are reviewed for interoperability, integration, and compatibility aspects.

f. Other DoD Components are advised when any changes are proposed during the life-cycle of any C3I system or equipment that affect identified interoperability requirements.

4. The Commanders of the Unified and Specified Combatant Commands shall:

a. In accordance with established JROC procedures, review the MNSs and the ORDs for new or modified C3I systems submitted by other commands and assess their potential impact on joint task force operations. Results of those reviews shall be provided to the Chairman of the Joint Chiefs of Staff.

b. Report to the Chairman of the Joint Chiefs of Staff, by way of the Commander in Chief's Preparedness Assessment

Report, any incompatibilities or lack of effective interoperability and integration:

- (1) Among the C3I systems.
- (2) Between the C3I systems and the Defense Information Systems Network (DISN).
- (3) Between the C3I systems and weapon systems.
- (4) Between the C3I systems and supporting functional systems.

c. Ensure that C3I systems acquired through the Commander in Chief's initiatives programs or other types of acquisitions that do not undergo a formal review process are certified as interoperable by the DISA.

5. The Director, Defense Information Systems Agency, besides applicable responsibilities in DoD Directive 5105.19 (reference (d)) and section E.3., above, shall:

a. Serve as the DoD single point of contact for development of information technology standards (information, information processing, and information transfer) developed in accordance with DoD 4120.3-M (reference (e)).

b. Develop and conduct a C3I systems interoperability testing and certification program, in collaboration with the other DoD Components, to verify interoperability.

c. Certify to the developmental and operational testing organizations and the Chairman of the Joint Chiefs of Staff that C3I systems and equipment meet the applicable standards and requirements for interoperability, compatibility, and integration based on certification testing.

d. Receive, for inclusion in the Joint C3I Interoperability Requirements Database, all approved DoD Component MNSs and subsequent ORDs for new developments, acquisition, or modifications of C3I systems. Verify that such requirements are consistent with appropriate techniques, procedures, architectures, interface standards, integration requirements, and definitions for the C3I systems.

e. When assessments identify conformance issues or candidates for joint consolidation of requirements, coordinate with the DoD Components involved to effect resolution. If resolution cannot be reached, provide an interoperability, integration, or compatibility impact statement, including recommendation for resolution, to the Chairman of the Joint Chiefs of Staff and the ASD(C3I).

f. Identify and maintain a master list of C3I systems and their interoperability requirements.

g. Perform interoperability, compatibility, and integration responsibilities, as tasked by the Chairman of the Joint Chiefs of Staff or the ASD(C3I).

h. In collaboration with the other DoD Components, identify requirements for information exchange and develop standardized procedures and formats for information flow among C3I systems.

i. Maintain a list of approved interface standards with which new DoD C3I systems and weapon systems must be in compliance for C3I information to be exchanged among the DoD Components and between the DoD Components and allied nations.

j. Review all DoD Component C3I systems Test and Evaluation Master Plans and Operational Test and Evaluation (OT&E) Plans to assess whether or not the test objectives are supported by adequate compatibility and interoperability testing.

6. The Director, Defense Intelligence Agency, besides applicable responsibilities in subsection E.3., above, shall:

a. Collaborate with the other DoD Components, as appropriate, to ensure adequate communication capacity, interoperability, and integration; and provide effective technical, procedural, and operational interfaces between C3I support systems and intelligence systems.

b. Represent the Department of Defense Intelligence Information System to the DISA for the definition and implementation of standards and information system technical architectures.

c. Coordinate with the Intelligence Program Support Group to ensure interoperability for strategic and tactical intelligence information systems.

7. The Director, National Security Agency/Chief, Central Security Service, besides responsibilities in subsection E.3., above, shall:

a. Ensure, where applicable, that the policies established in section D., above, are complied with for Signals Intelligence collection, processing, and dissemination systems of the Department of Defense.

b. Ensure interoperability and integration of intelligence systems with those systems that provide direct support to the C3I force structure of the combatant commander.

8. The Director, Defense Mapping Agency, besides responsibilities outlined in subsection E.3., above, shall ensure that standards and specifications established for Mapping, Charting, and Geodesy data support the interoperability of C3I systems.

F. PROCEDURES

1. Requirements Review. All the Component-approved MNSS and the ORDs involving C3I systems shall be provided by the submitting component to the DISA, which shall do an assessment, to be completed in 30 days, incorporating inputs from the other DoD Components. The emphasis of that assessment shall be on maximizing interoperability, compatibility, and integration. The assessment shall be forwarded to the appropriate DoD Component acquisition authority who shall address the concerns pointed out in that assessment. Unresolved concerns shall be forwarded by the DISA to the Chairman of the Joint Chiefs of Staff for resolution and/or recommendations to the appropriate body during the program decision process. The following shall be considered during that assessment:

a. Compatibility, interoperability, and integration with current or planned systems of the other DoD Components, or between one or more DoD Components and one or more allied nations, or both (DoD Directives 5000.1, 5100.35, and 3100.4 (references (b), (f), and (g))). Data element definitions and naming conventions shall be in accordance with guidance in DoD Directive 8320.1 (reference (h)).

b. Communication Security (COMSEC) Considerations. The implications of COMSEC sharing, especially in cases of combined interoperability, must be carefully considered. The scope of such interoperability shall be highly dependent on the willingness of participating nations to share COMSEC algorithms and crypto codes. COMSEC shall be considered as a major factor in determining the operational practicality of C3I interoperability among nations. Additionally, DoD Directive C-5200.5 (reference(i)) must be met.

c. Adherence to U.S. Federal and DoD standards, U.S.-ratified NATO STANAGs, and other international STANAGs accepted for U.S. use (DoD Directives 2010.6, 2010.7, and 3100.3 (references (j), (k), and (l))) is required.

2. Standards. All C3I systems and equipment shall conform to technical and procedural standards for compatibility and interoperability, as developed or recommended by the DISA under guidance provided by the Chairman of the Joint Chiefs of Staff, in accordance with DoD Directive 5105.19 (reference (d)) and shall conform to established standards. The DISA shall collaborate with other Defense Agencies (e.g., the Defense Intelligence Agency and the National Security Agency, as appropriate, when intelligence systems are involved; Defense

Mapping Agency when MC&G data are involved; etc.) in developing these standards. This collaboration will be ensured by the DoD Standards Coordination Committee (SCC). The SCC will ensure that standards prescribed for any new hardware or software are consistent with those of systems that they are to interoperate. Systems developers shall submit requirements for new or revised standards to the DISA in accordance with DoD 4120.3-M (reference (e)). Only after it has been determined that international, commercial, or Federal standards will not meet the requirement shall the development of new military standards be undertaken. If new U.S. military standards are required, they shall be developed, in accordance with (reference (e)). On a case-by-case basis, standards and specifications may be developed to achieve interoperability among U.S. and allied C3I systems and equipment. The DoD Components employing those standards and procedures shall conform with joint configuration management procedures, as prescribed by part 9, section A, of DoD Instruction 5000.2 (reference (c)). Resolution of conflicts concerning the precedence of standards established for U.S. C3I systems and those agreed with other nations or alliances shall be made, on a case-by-case basis, by the ASD(C3I).

3. Acquisition. Acquisition of C3I systems and equipment is done in accordance with DoD Directive 5000.1 (reference (b)) and reference (c). All C3I MNSs and ORDs must specifically address compatibility, interoperability, and integration requirements. Automated Information Systems (AISs) are reviewed by the Major AISs Review Council in accordance with DoD Directive 7920.1 and DoD Instruction 7920.2 (references (m) and (n)), which provide guidance for the life-cycle management of the AISs. DoD milestone decision authorities must ensure that compatibility, interoperability, and integration are addressed as critical system characteristics at each review, beginning with Milestone I and proceeding through Milestone IV. The ASD(C3I) shall ensure that concerns still unresolved as a result of the DISA's assessment are provided for consideration at each milestone review.

4. Test and Evaluation (T&E). T&E of C3I systems and equipment is done in accordance with DoD Directive 5000.1 (reference (b)) and DoD Instruction 5000.2 (reference (c)). The Director, Test and Evaluation (DT&E), Office of the Under Secretary of Defense (Acquisition) (OUSDA), shall ensure that the DISA is included in the review process of all T&E plans. The DISA shall provide the DT&E and the Director, Operational Test & Evaluation (DOT&E) comments and recommendations on T&E plans concerning the adequacy of objectives and methods of the test programs to support compatibility, interoperability, and integration testing. The T&E, to ensure technical and procedural interoperability of C3I systems and equipment, shall be performed during all acquisition phases. Other joint or combined tests to verify interoperability and to support approval of interfaces for use in joint and combined military operations shall be conducted as necessary and shall conform

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with guidance provided by the Director, DISA, in coordination with the DT&E, OUSD(A), and D,OT&E.

5. Certification. The Director, DISA, shall certify to the appropriate developmental and operational testing organizations and the Chairman of the Joint Chiefs of Staff, C3I equipment and systems that must operate within a joint interface for use in their intended applications on successful completion of required compatibility, interoperability, and integration certification tests as an integral part of the acquisition and life-cycle management process. Because failure to meet certification may be interpreted that a system is not operationally effective, the DISA shall provide a report on certification testing results to the Director, OT&E, to ensure there are no conflicts during the Defense Acquisition Board process. Failure to be initially certified shall be critical to OSD production approval and Chairman of the Joint Chiefs of Staff use approval decisions. Major hardware and software modifications to C3I systems that impact on the previously established joint interface requirements shall require recertification. Failure of either certification or recertification will normally result in denial of these approvals. If a temporary waiver from testing requirements, based on justifiable circumstances, is granted by the Joint Staff, testing will not be required until the expiration of the waiver. Wavers granted for long periods will have more stringent criteria applied.

G. INFORMATION REQUIREMENTS

The reporting requirements contained in section E., above, are exempt from licensing in accordance with paragraph E.4.b. of DoD 7750.5-M (reference (c)).

H. EFFECTIVE DATE

This Instruction is effective immediately.



Duane P. Andrews
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(Command, Control, Communications and Intelligence)

Enclosures - 2

1. References
2. Definitions

REFERENCES, continued

- (e) DoD 4120.3-M, "Defense Standardization and Specification Program Policies, Procedures, and Instructions," August 1978, authorized by DoD Instruction 5000.2, February 23, 1991
- (f) DoD Directive 5100.35, "Military Communications-Electronics Board," May 6, 1985
- (g) DoD Directive 3100.4, "Harmonization of Qualitative Requirements for Defense Equipment of the United States and its Allies," September 27, 1963
- (h) DoD Directive 8320.1, "DoD Data Administration," September 26, 1991
- (i) DoD Directive C-5200.5, "Communications Security (U)," April 21, 1990
- (j) DoD Directive 2010.6, "Standardization and Interoperability of Weapons Systems and Equipment Within the North Atlantic Treaty Organization," March 5, 1980
- (k) DoD Directive 2010.7, "Policy on Rationalization of NATO and NATO Member Telecommunication Facilities," July 6, 1981
- (l) DoD Directive 3100.3, "Cooperation with Allies in Research and Development of Defense Equipment," September 27, 1963
- (m) DoD Directive 7920.1, "Life Cycle Management of Automated Information Systems," June 20, 1988
- (n) DoD Instruction 7920.2, "Automated Information System (AIS) Life-Cycle Management Review and Milestone Approval Procedures," March 7, 1990
- (o) DoD 7750.5-M, "DoD Procedures for Management of Information Requirements," November 1986, authorized by DoD Directive 7750.5, August 7, 1986

DEFINITIONS

1. Certification. Confirmation by the Chairman of the Joint Chiefs of Staff, based on assessments by the DISA, that appropriate testing has been accomplished and that the applicable standards and requirements for compatability and interoperability have been met.
2. C3I System. Communication, automated information or intelligence systems, or equipment that assists the commander in planning, directing, and controlling forces.
3. Mission Need Statement (MNS). A statement identifying the need for a new operational capability required to perform an assigned mission or to correct a deficiency in an existing capability.
4. Operational Requirements Document. A statement containing performance (operational effectiveness and suitability) and related operational parameters for a proposed concept or system.
5. Standard. In the context of communications-electronics equipment acquisition and development, a set of technical and procedural (e.g., U.S. Message Text Formats and Tactical Data Links) parameters with which equipment must comply, to achieve compatibility and interoperability with other equipment.
6. Validation. For C3I systems, confirmation, by the Chairman of the Joint Chiefs of Staff, that mission needs identified can only be satisfied by a change in materiel and cannot be satisfied by a change in doctrine, operational concepts, tactics, training, or organization.